

# EXHIBIT 1

**HOW YOU CAN SAVE  
UP TO 40%  
ON YOUR HOME  
HEATING COSTS**



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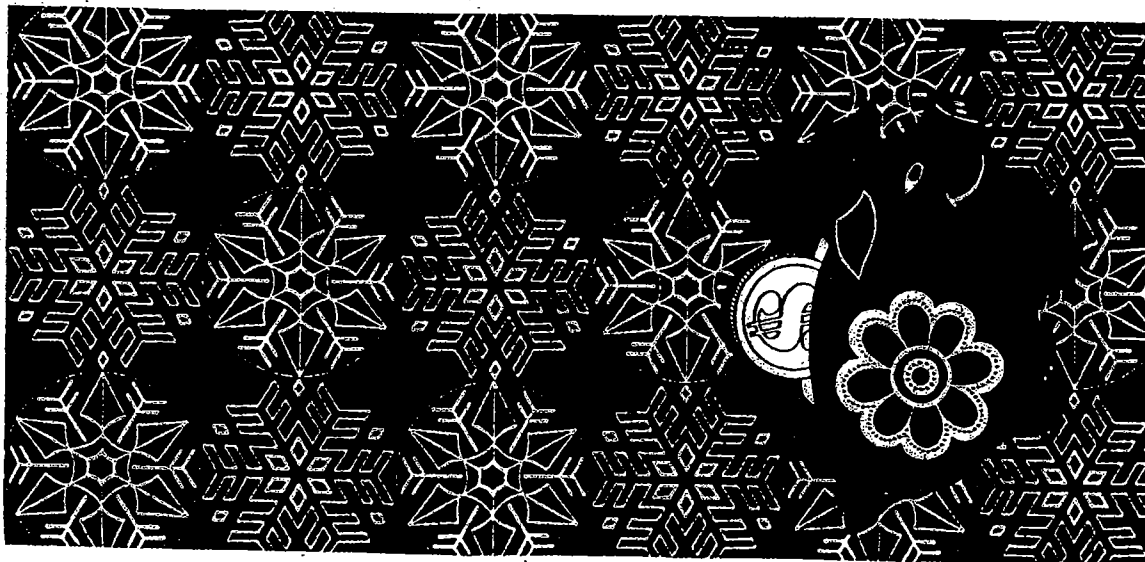
ZAI 002491

## THIS BOOKLET WILL TELL YOU HOW YOU CAN CUT YOUR FUEL BILLS

If you're like most homeowners, your fuel bills are soaring higher every year. Experts say that they will go still higher in the future because of the fuel shortages our country is facing. This is the "energy crisis" we've all heard about.

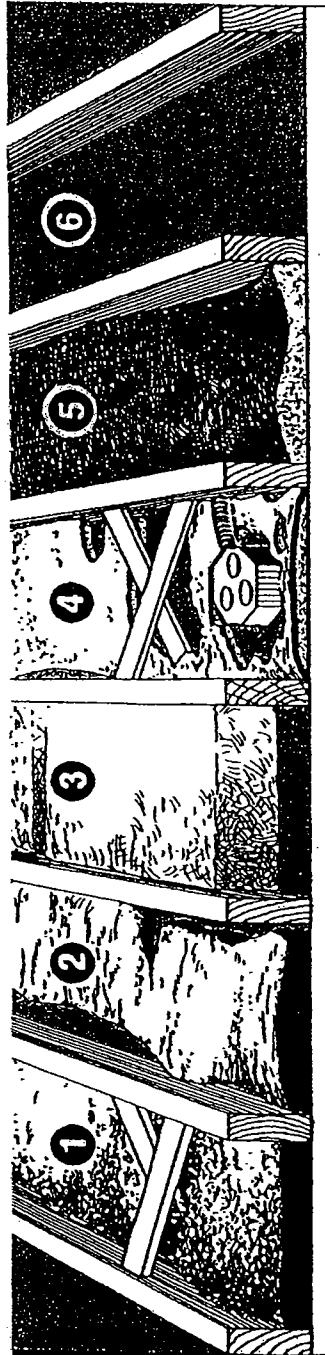
## INSULATION PAYS FOR ITSELF

Insulation is what this booklet is all about. *Reading time is less than five minutes.* You will find how to save up to forty percent on your annual fuel bills while getting a bonus in added comfort, winter and summer. Insulation is a one-time investment that pays for itself in two or three heating seasons and then goes on paying dividends year after year.



ZAI 002492

## HEAT SIEVE



**YOUR ATTIC  
...THE FIRST  
PLACE TO  
LOOK WHEN  
YOU WANT TO  
SAVE FUEL**

Heat rises. If your attic is poorly insulated, it becomes a "heat sieve". As the heat leaks to the outdoors the money you spend on fuel is wasted.

Have you looked in your attic lately? Make an inspection, and see if you find the problems listed here. If you do, then you have a golden opportunity to reduce your fuel bills.

**1 Compacted and thin loose-type insulation:** Many homes are insulated with blown mineral wool. Perhaps not enough was used or perhaps with time, the insulation has settled. You need at least 6" of even thickness.

**2 Voids along joists:** If you can see spaces between the insulation and the attic joists, then you have "chimneys" for heat leaks.

**3 Voids between batts or blankets:** Every joint between pieces of insulation costs you money by allowing heat to escape. If you have 6" of insulation, but it has gaps amounting to only 5% of the attic area, filling the gaps will reduce cost of attic heat loss by 30%. Insulation cost to fill the

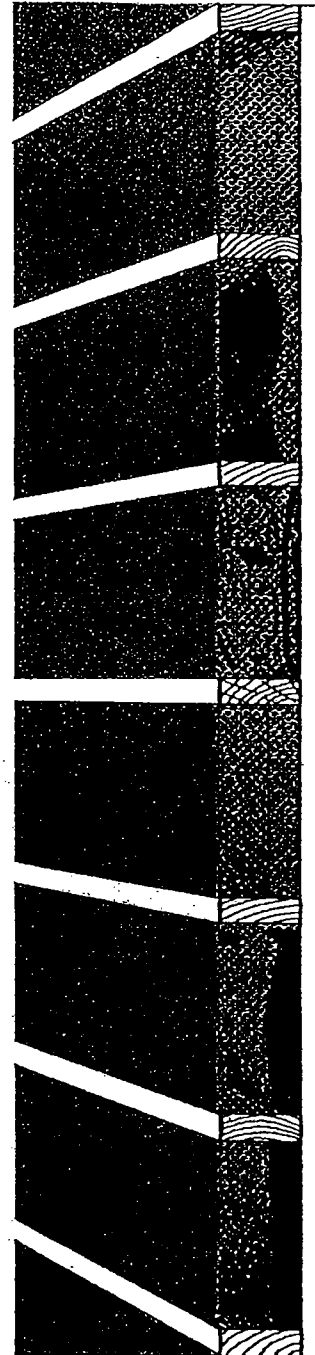
gaps is minimal — about ten bags in a 1,200 sq. ft. attic.

**4 Improper fill:** Bracing, wiring or other obstructions create gaps in the insulation, and result in heat leaks.

**5 Too-thin blanket insulation:** If you can measure less than 6" there is not enough insulation. A few years ago, less than 6" might have been enough. With rising fuel costs, 6" is considered the minimum.

**6 No insulation at all:** If your attic is uninsulated, 6" of Zonolite can reduce the cost of attic heat loss by 90% and, of course, reduce fuel consumption by 90%.

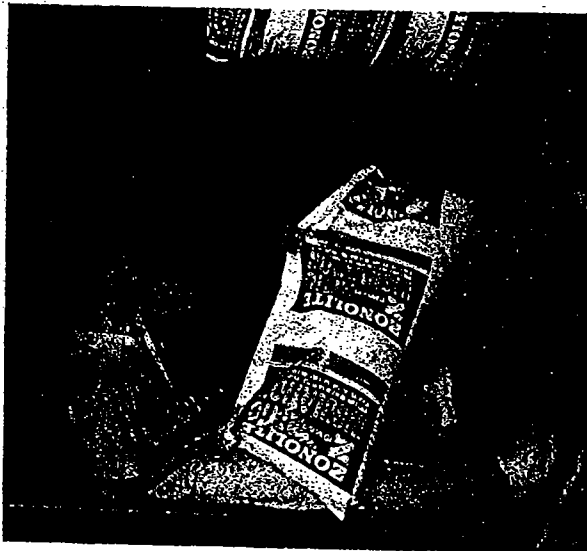
## HEAT SEAL



**HERE'S ONE WAY  
TO SOLVE THESE  
PROBLEMS AND  
START SAVING  
FUEL DOLLARS  
RIGHT AWAY**

Just pour Zonolite® Attic Insulation over the present insulation in your attic. Why Zonolite?

ZAI 002493



## **ZONOLITE ATTIC INSULATION IS THE EASIEST OF ALL TO INSTALL**

Installing Zonolite is as easy as pouring popcorn out of a bag. There's no need to hire a contractor, just install Zonolite yourself and save.



## **JUST POUR IT...**

... Zonolite Insulation flows freely from the bag into spaces between attic joists, completely filling all voids.

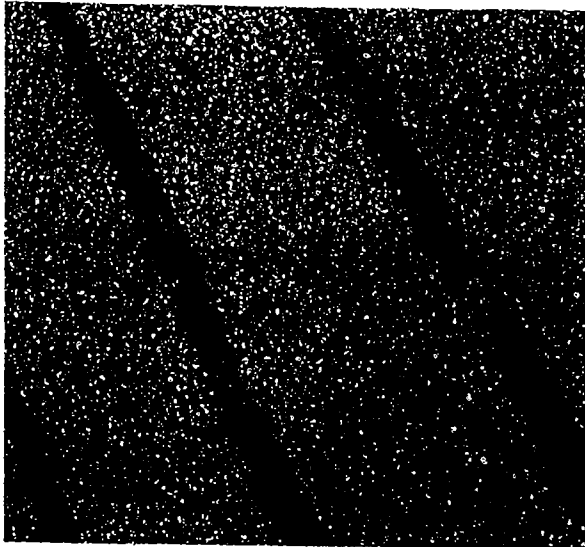
## **LEVEL IT...**

Zonolite will retain its uniform thickness and insulating value.

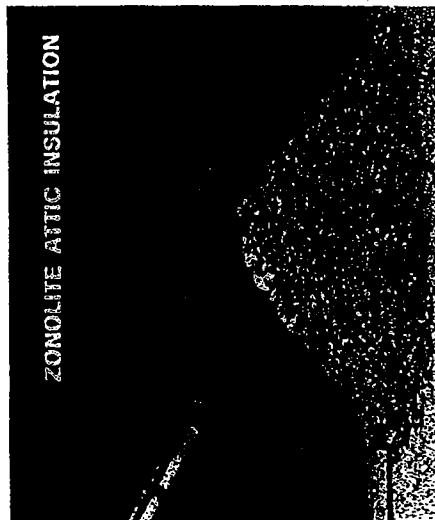
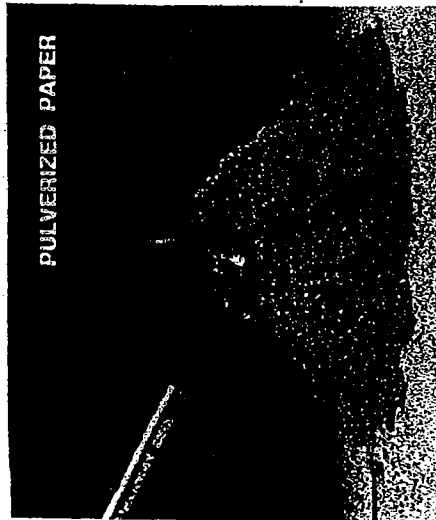
## **LEAVE IT...**

Your savings start the minute the job is done. Zonolite is a heat seal that conserves fuel dollars.

When you add insulation to your attic, it's an investment that quickly pays for itself, then returns dividends year after year. Choose Zonolite Insulation for the best results.



ZAI 002494



No other product such as mineral wool or ground up paper performs like Zonolite Attic Insulation and offers all these important advantages:

**LOW-COST INSTALLATION:** Zonolite is so easy to install, you can do your whole attic yourself in a single afternoon. No need to call in a professional. Also, you can either do the whole attic at once, or install a few bags at a time until the job is completed.

**PERMANENT HEAT BARRIER:** Tests by leading laboratories prove Zonolite is a permanent heat barrier. It will be just as effective fifty years from now as the day it's installed.

**FIRE-SAFE:** Because it is 100% mineral vermiculite, Zonolite Attic Insulation won't burn or smoke under any conditions. (It has the best fire rating that Underwriters' Laboratories can give a material.)

Many other insulations, such as those made from ground up paper, are combustible.

**SAFE, NON-IRRITATING TO HANDLE:** Zonolite Attic Insulation is clean and lightweight. No need for gloves — it won't irritate your skin as some insulation materials will.

**FILLS COMPLETELY:** Easy-pouring,

fast-flowing Zonolite fills every nook and corner. It cannot ball up on rough obstructions or around nails. Won't leave "holidays" in coverage to leak precious heat.

**SOUND - DEADENING:** Homeowners tell us that Zonolite vermiculite helps deaden sound — keeps the whole house quieter.

**DIELECTRIC:** Zonolite Insulation does not conduct electricity. This can be an important safety factor, especially in older houses with exposed attic wiring.

**ODORLESS:** Zonolite Attic Insulation is clean and odor free. It will not absorb or release odors under any circumstances.

**ROTPROOF:** Because Zonolite Insulation is a 100% mineral product, it cannot decompose due to heat, moisture or extreme dryness. Even a roof leak cannot permanently affect Zonolite.

**NO WASTE:** When you install Zonolite Attic Insulation you pour out the exact quantity required. There's no

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cutting and trimming; nothing to throw away. Unlike batts, Zonolite Attic Insulation is easy to install to any desired thickness.

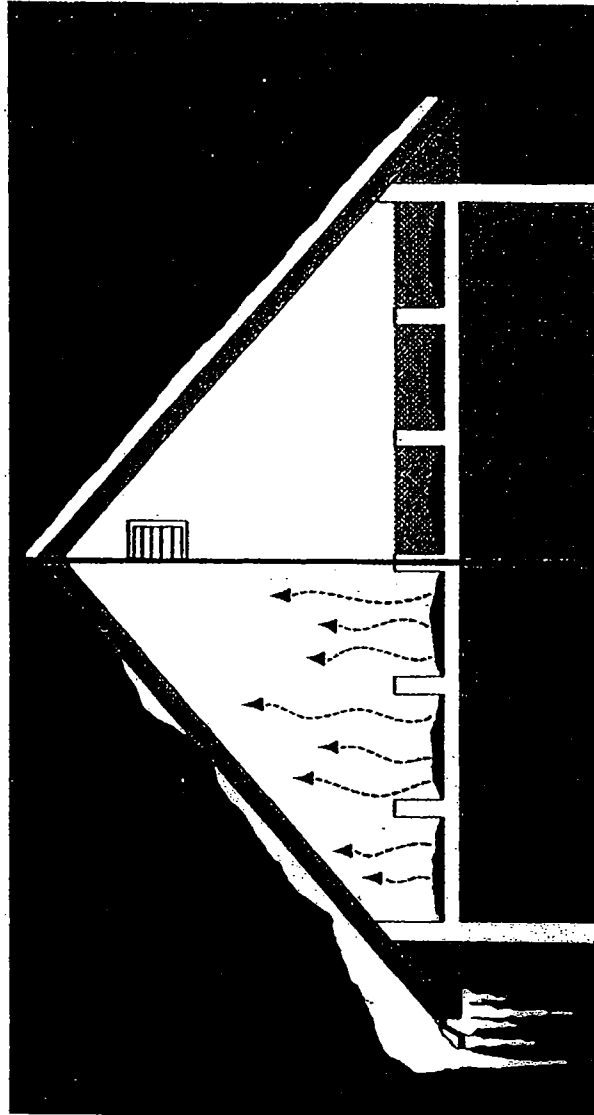
**INSECT AND RODENT-PROOF:** Rats,

mice, insects, won't eat or nest in Zonolite Attic Insulation.

**MOISTURE-RESISTANT:** Contains nothing which can be chemically affected or deteriorated by dampness.

**IDEAL FOR AIR-CONDITIONED HOMES:** With Zonolite Insulation in your attic, you won't need to run your air conditioner as high or as frequently. You save electricity and prolong the service life of your unit.

**PROPER ATTIC INSULATION CAN HELP PREVENT DAMAGE FROM ICE DAMS ON YOUR ROOF**



**WRONG**

Skimpy attic insulation lets heat escape through roof. Snow melts too fast. Water runs to eaves and freezes to form hazardous icicles and harmful ice dams. Effects include high fuel bills, gutter damage, peeling paint, rotted soffits, leaks inside walls, damage to interiors.

**RIGHT**

Zonolite in the attic blocks heat loss, allowing snow on roof to melt gradually. This minimizes damaging ice formation. Attics should be well vented, winter and summer, for extra protection.

USE THIS HANDY CHECK  
LIST TO COMPLETELY  
WINTERIZE YOUR HOME



ZAI 002497



**YOUR SOURCE  
FOR ALL HOME  
MODERNIZING  
PRODUCTS**

**COME IN TODAY** for a free estimate on the cost of insulating your attic with Zonolite. Just bring the rough dimensions of the area to be insulated and we'll show you how little it costs to enjoy the savings and comfort Zonolite Attic Insulation can provide.

**ZAI 002498**

## EXHIBIT 2

# ZONOLITE ... THE WORLD'S MOST REMARKABLE INSULATION

## KEEPS YOUR HOME IN THE Comfort Zone

UNINSULATED ... ZONOLITED



Zonolite Makes Living Rooms Livable



Zonolite Does Away with Sizzling Hot Bedrooms



Zonolite Helps Keep Children Happy and Healthy

## What is ZONOLITE?

Zonolite is a lightweight, clean material containing millions of tiny dead-air cells which stop heat passage. Zonolite also has countless brilliant reflective surfaces which reflect heat as a mirror reflects light. These dual properties make Zonolite the most efficient insulation known.

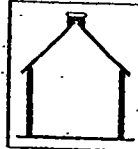
Zonolite is good for the life of your house. It is fireproof, rotproof, vermin and rodentsproof, odorless, safe and absolutely permanent.



## WHERE IS ZONOLITE INSTALLED?

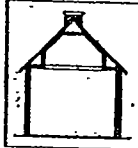
### IN WALLS

Zonolite can be poured or blown in the hollow spaces between the walls of your house. It flows easily around obstruction and fills every crack and corner completely and uniformly. Trained Zonolite Applicators know exactly how to install the material quickly and neatly.



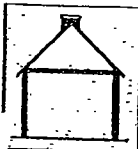
### IN FINISHED ATTICS

Zonolite can be installed in the attic so as to make it really usable for extra living quarters, maid's room, or game room. This space, a bare-oven in an uninsulated house, becomes a normal, comfortable room when Zonolited.



### IN UNFINISHED ATTICS

Zonolite is spread between attic joists, forming a thick protective barrier against heat which, in an uninsulated house, keeps down from the roof and spreads through the whole house. No matter how hot the attic, Zonolite keeps upper rooms within a degree or two of downstairs temperatures.



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## ZONOLITE IN THE ATTIC ALONE WILL MAKE A GREAT DIFFERENCE!

By far the greatest heat passage is through the roof and attic. Insulate your attic with Zonolite and you will immediately notice the difference. Rooms become from 8 to 15 degrees cooler than outside temperatures. Many home owners insulate their attics first, then side walls later, thus gradually and inexpensively obtaining a perfectly insulated house.

## ZONOLITE BRINGS YEAR 'ROUND COMFORT ... and SAVES FUEL.

When temperatures drop to the point where your furnace is needed, Zonolite is still your friendly guardian. It keeps out cold and drafts ... keeps in supplied heat. Thus, less fuel is needed to maintain rooms at constant, comfortable temperatures, and Zonolite saves you money while protecting you from changes in the weather.

Find out today how little it will cost to Zonolite your home. An experienced Zonolite Insulation Expert will give you full details without obligation.

## ZONOLITE THE 25-POINT INSULATION

1. Form, tamperproof, easy (weight per cubic foot)
2. Permanent low thermal conductivity
3. Low installation cost
4. Dual insulation value (dead air cells plus reflective surfaces)
5. Constant fuel saving—year after year
6. Comfortable summer and winter temperatures
7. Ideal for air conditioned homes
8. Chemically inert
9. Vermin and rodentsproof
10. Rotproof
11. Fireproof
12. Safe
13. Dielectric
14. Odorless
15. Clean
16. No settlement
17. Permanent
18. Will not absorb moisture
19. Excellent sound-deadening value
20. Easy to install
21. Light in weight
22. A thick insulation
23. No waste
24. Complete fill
25. Recommended by leading architects, builders, and insulation experts.



# HOW TO "GET AWAY FROM IT ALL"

ZAI 002068

## STAY HOME AND BE COOL ... with ZONOLITE Insulation!

INSTALL A HEAT-RESISTING BARRIER OF ZONOLITE BETWEEN YOU AND THE SUMMER SUN ... and KEEP YOUR HOME COOL AND COMFORTABLE in the HOTTEST WEATHER

Imagine the added pleasure and pride you'd take in your home if it were restful and livable on even the most blistering summer days. How refreshing to step from burning sunlight into a house that's cool as a shaded woodland grove. To slumber peacefully, restfully, in a bedroom as comfortable as any downstairs room. To enjoy your meals ... to take a genuine delight in your evenings at home as though the temperature outside were 75° instead of 90°.

A miracle? Yes, but one which can easily come true—without bother, fuss or great expense. With Zonolite Insulation in the attic and between your home will be a happier, healthier and more comfortable place to live.

There's no place like home

... sings the happy family which has found that Zonolite insulation ensures a summer-long vacation from sweltering days and oppressive nights. Zonolite will bring constant coolness to their home, for many summers to come ... at a price any family can afford.



**LOOK--**

## How Easy it is to Install ZONOLITE Yourself!

**E**ASY as pouring popcorn from a bag to install Zonolite in your attic. So lightweight, dustless, clean, simple to handle that a child could pour it between attic joists. That's right, just pour it, level it, leave it! No other insulation is so simple!

In sidewalls, Zonolite vermiculite fills perfectly around wiring, nails, other obstructions. No chance for dead air space, voids won't pack, mat, or settle down.

Users report up to 40% fuel savings in heating season - actually up to 15% cooler interiors in summer!

### Here's How to Tell How Much Zonolite You Need

Thickness	2"	3"	3 1/2"	4"	5 1/2"
Coverage per bag in Sq. Feet	26	17	14	13	9

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for as Low as **\$67 60**

# INSULATE YOUR HOME!



**WHY  
SWELTER?**

ZAI 002166

# ZONOLITE

VERMICULITE INSULATION



# THE WORLD'S MOST REMARKABLE INSULATION

**KEEPS YOUR HOME** *What is ZONOLITE?*  
**IN THE Comfort Zone**

**INSULATED . . . ZONOLITE**



*Zonolite Makes Living Rooms Livable*



*Zonolite Does Away with Stifling Hot Bedrooms*



*Zonolite Helps Keep Children Happy and Healthy*



## WHERE IS ZONOLITE INSTALLED?

### IN WALLS

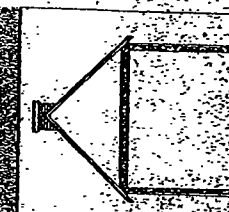
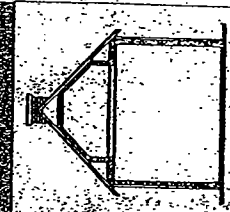
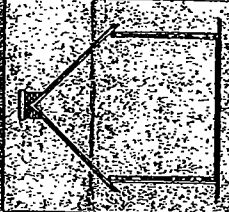
Heat travels through the walls of your home. Zonolite insulation stops heat from entering or leaving your home. It keeps your home comfortable all year long. Zonolite is the only insulation that is fireproof, moldproof, and insectproof. It is also the only insulation that is guaranteed to last for ever.

### IN UNFINISHED ATTICS

Heat travels through the attic of your home. Zonolite insulation stops heat from entering or leaving your home. It keeps your home comfortable all year long. Zonolite is the only insulation that is fireproof, moldproof, and insectproof. It is also the only insulation that is guaranteed to last for ever.

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When temperatures drop to the point where your furnace is needed, Zonolite is still your friendly guardian. It keeps out cold and drafts . . . keeps in supplied heat. Thus, less fuel is needed to maintain rooms at constant, comfortable temperatures, and Zonolite saves you money while protecting you from changes in the weather.

**ZAI 002071**

Find out today how Zonolite will comfort Zonolite's your home. An expert Zonolite installer will give you all details. Write now to Zonolite.

768

# NEW WAY INSULATE



If you haven't heard or read about  
the **NEW EASY ZONOLITE** way, read  
the following revealing facts

If you have an average size home, you can completely insulate  
the attic **YOURSELF** with **ZONOLITE Vermiculite** Home  
Insulation—in just one afternoon! Yes, you just do it yourself  
and save the cost of having it installed. Thousands of home  
owners have installed this amazing two-way insulation in their  
basement, attic, or crawlspace, and doing an entire attic for as little as \$67.60.

## Here's All You Do

Just open the lightweight bag of Zonolite Home Insulation and  
pour the contents into attics or sidewalls. Level it off and  
that's all! You're through! You'll love the way Zonolite fills  
solidly and uniformly around nails, wiring, any obstruction.

**ZONOLITE Vermiculite** is the perfect insulating material, con-  
sisting of thousands of tiny dead air cells that resist the passage  
of heat—and countless reflective surfaces that act like a mirror  
in "repeating" the sun's rays. Thus Zonolite gives you double  
efficiency.



Pouring Zonolite in  
Unheated Attic



Insulating Floored  
Attic by Removing  
Floorboards, or  
Intervals



Sidewalls Insulated  
with Zonolite

# Keep COOL Summer!

So fast that Zonolite Vermiculite Insula-  
tion cuts your summer temperatures in your  
home as much as 15°! Why live in a heat  
trap this summer when Zonolite costs so  
little—is so easily installed—guarantees such  
comfort!

Zonolite has many extra benefits too. It's  
non-toxic—so fireproof it snuffs out flame.  
Zonolite is all mineral—it's not fit food for  
any other vermin. And Zonolite Insula-  
tion is odorless, dust-free, non-irritating  
and a non-conductor of electricity. Surely  
no insulation you can name offers so much  
value at so little cost!

**SLASH** Zonolite users have reported  
**THOSE** fuel savings up to 40% after  
**FUEL** installing this miracle product.

**BILLS** Frequently owners find that  
fuel savings pay for the cost  
of the insulation in 3 to 4 years. Of course  
each year after that your Zonolite insulation  
pays for itself—just like money in the bank.  
Year after year!

**HERE'S HOW TO TELL HOW MUCH  
ZONOLITE YOU NEED**

Attics	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
GOVERNMENT	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

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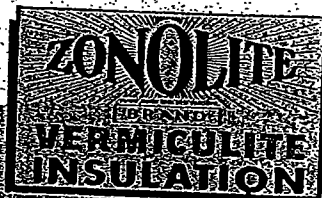


# BETTER

In 25 Distinctive Ways

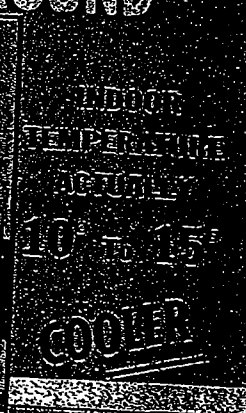
1. Uniform, tamperproof density, cannot be fluffed up or packed
2. Permanent low thermal conductivity
3. Low installation cost
4. Dual insulation value (Dead-air cells plus reflective surfaces)
5. Constant fuel saving—year after year
6. Comfortable summer and winter temperatures
7. Ideal for air conditioned homes
8. Chemically inert
9. Vermin and rodent proof
10. Rotproof
11. Fireproof
12. Safe
13. Dielectric
14. Odorless
15. Clean
16. No disintegration
17. Permanent
18. Practically moistureproof
19. Helps soundproof walls and floors
20. Easy to install
21. Light in weight
22. A thick insulation
23. No cutting, fitting or waste
24. Complete fill
25. Recommended by leading architects, builders and insulation experts

For Prompt, Courteous Service, Call or Write



# Comfort

ALL YEAR 'ROUND



HOME  
OWNERS  
REPORT  
FUEL  
SAVINGS  
UP TO  
**40%**



**ZONOLITE** VERMICULITE INSULATION

ZA 002072

## A FEW OF THE MANY REASONS WHY MORE PEOPLE ARE USING

# ZONOLITE

1. **LOW INSTALLATION COST** . . . A minimum of time is needed to apply Zonolite insulation. You just pour into place.
2. **CONSTANT FUEL SAVING** . . . Zonolite's lasting insulating properties assure low fuel and power bills year after year. Pays for its cost in 3-4 years!
3. **COMFORTABLE SUMMER AND WINTER TEMPERATURES** . . . It's easy to control temperatures when you have Zonolite in your home.
4. **FIREPROOF** . . . Zonolite is the most fire-safe material you can put into your home.
5. **SAFE** . . . Zonolite contains no harmful substance, will not irritate the skin.
6. **LIGHT BUT THICK** . . . Lightness makes for easy handling. Zonolite pours as a thick fill into every nook and corner.



## ARE COSTLY AND LONG

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*Insulate with*  
**ZONOLITE**



**YOU'LL BE SURPRISED AT THE DIFFERENCE  
ZONOLITE WILL MAKE!**

**LIGHT  
CLEAN  
PLEASANT  
TO HANDLE**

*Just an hour or two of  
Pleasant Work installs  
Zonolite in your Attic—*

**EASILY INSTALLED  
In 2 Simple Operations**

**1**

**2**

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• It's very easy to install Zonolite . . . just pour it between your attic joists like pouring sugar out of a sack . . . then level it off to a uniform thickness with a piece of board . . . and you'll have a first class job with a high insulating efficiency!

Zonolite is clean, light, very easy to handle and no special training, tools or equipment are required.

*And your First Low  
Cost is the Last!*

• Once installed, Zonolite is there to stay. It costs nothing to maintain and gives you year 'round comfort for a lifetime. Your only cost is the cost of material . . . no expert labor to hire or tools to buy. You will be surprised at how little it will cost to enjoy this modern comfort!

**A REMARKABLE, HIGHLY  
EFFICIENT PRODUCT**

• Zonolite is a very light, clean insulation containing millions of minute air cells which effectively retard the passage of heat. Zonolite also retards the passage of heat by reflection. It is fireproof, vermin proof, odorless and will not deteriorate. It is absolutely safe and permanent.

Zonolite keeps the torrid heat of summer out of your house. In winter it conserves your fuel and keeps your house warm and free from drafts.

Zonolite is a perfect, permanent insulating barrier against the passage of heat!

*Make your home more Livable with*

**ZONOLITE**  
TRADE MARK REGISTERED

*Enjoy the COOLER Feeling in Summer!*

### *Zonolite is easily installed*

The installation of Zonolite requires no high priced mechanics nor special equipment. You can do the work yourself in just a few hours . . . and do it with absolute confidence of obtaining full insulating efficiency . . . because ZONOLITE simply pours into place, as easily as pouring sugar out of a sack! Consequently you need pay only for the material itself for, by doing your own work of installing you save all labor costs. You will be surprised at how inexpensively you can insulate your home!

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### *Only Two simple operations*

To install Zonolite in your attic, first pour it between attic joists, and second level it off to a uniform depth . . . and the job is done! Immediately the heat which formerly escaped through your attic (to melt snow on your roof instead of keeping your home comfortable) is retained and your fuel costs definitely drop! Walls are insulated simply by pouring Zonolite into the open stud spaces until they are filled.

### **Enjoy the advantages of Insulation with**



### **Light, Clean and Pleasant to Handle**

Zonolite is clean, light . . . easily and rapidly handled . . . IT POURS. It is not abrasive, or in any way injurious to the hands or health.

### **Just one low First Cost!**

When you have installed ZONOLITE it's there "for good", it will last as long as the home itself . . . need never be renewed or repaired . . . it is absolutely permanent and the first cost is the last. BUT . . . your investment will pay you rich dividends in cash savings and comfort every year thereafter.

● Your Home will be Warmer in Winter, Cooler in Summer with Zonolite Insulation ●

# ZONOLITE ATTIC IN

**TRUCKLOAD PRICES**

## DOWN WITH GOOSEPIMPLES SALE

### Add Zonolite Attic Insulation

Now is the time to make sure your family doesn't spend the winter in Long Johns trying to get rid of goosepimples. And all you do to keep your house warm and cozy all winter is add some Zonolite® Attic Insulation.

Hot air from your furnace rises right through the ceilings because old-fashioned thin fluff insulation in your attic can't stop it.

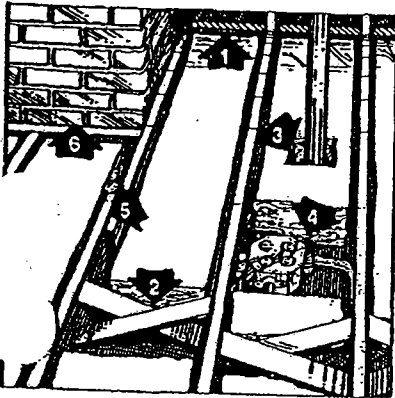
Thick Zonolite Attic Insulation keeps the heat in. Just pour it right over the old fluff, level it off at the top of the joists and forget it.

Heat bills go down. Goosepimples disappear. And your family can forget about wearing Long Johns. You get all this — and truckload prices, too.



**ONLY \$0.00**

These gaps in your attic are costing you money!



Whether you are insulating your attic for the first time or touching-up old insulation, don't overlook the gaps which allow costly heat to escape. You can fill them the easy way with Zonolite Vermiculite Attic Insulation and double your insulating power. Just pour Zonolite Attic Insulation into any of these areas to complete your insulation job right.

1. where batts do not meet joists on sides
2. around cross-bracing
3. around pipes
4. around junction boxes
5. at overlapping joists
6. around chimneys

### Zonolite® Attic Insulation... the easy way to fill the gaps

With Zonolite Attic Insulation, all you do is open a lightweight bag, pour it in the gaps and forget it. No special tools are required — no messy cutting, fluffing or trimming. And because Zonolite Attic Insulation is all-mineral vermiculite, it won't irritate your skin or cause itching.

Zonolite Attic Insulation never needs to be replaced and will last for the life of your house. Plus it's completely rot-proof so its full insulating value is never diminished.

Zonolite Attic Insulation is perfect for use as a finishing touch to your new fiberglass insulation or to upgrade old insulation. One bag of Zonolite is normally enough material to complete the installation of two rolls of fiberglass.

### Features & Benefits

- Lightweight bag
- Easy-to-install
- No special tools required
- No messy cutting, fluffing or trimming
- Free-flowing, fills areas completely
- Won't settle
- Won't irritate skin or cause itching
- Will not burn
- Rot and vermin proof
- Permanent, lasts for the life of your house

### Perfect for those big jobs too!

Zonolite Attic Insulation not only perks-up fiberglass installations, but it's fine by itself as a primary insulation.

Because of its free-flowing characteristic, Zonolite is also great for insulating sidewalls, or other hard-to-reach areas. When insulating sidewalls, make sure that all wall obstructions (holes) are filled and, as with all insulations, a proper vapor barrier is applied to the walls. This can be easily accomplished with a vapor barrier-type paint.

**Coverage & "R" Value Chart**  
(Per 12 lb. Bag)

Thickness (inches)	1	2	3	4	4½	8	9
"R" Value	2.4	4.8	7.2	9.6	11.0	18.0	22.0
Maximum Sq. Ft./ Bag Coverage*	33	17	11	7½	4	3¼	
Minimum VLSq. Ft. (ba.)	½	¼	1	1½	1½	2½	3

**EACH BAG OF ZONOLITE ATTIC INSULATION CONTAINS APPROXIMATELY 3 CUBIC FEET**  
\*Coverage includes joists 16" o.c.

Savings vary. Find out why in the Seller's Fact Sheet on R-Values. Higher R-Values mean greater insulating power.

# Zonolite Attic Insulation puts its 'R' values to work



08229766

## By filling to fit the hard-to-fit places

Free-flowing granules of Zonolite vermiculite naturally find their way over, under, and around all obstructions for a complete insulating seal.

This insulation is sure to fit snugly against joists no matter how badly spaced. No heat-leak voids. No ill-fitting joints.

Zonolite vermiculite pours to any desired thickness for economical electric heating and air conditioning.

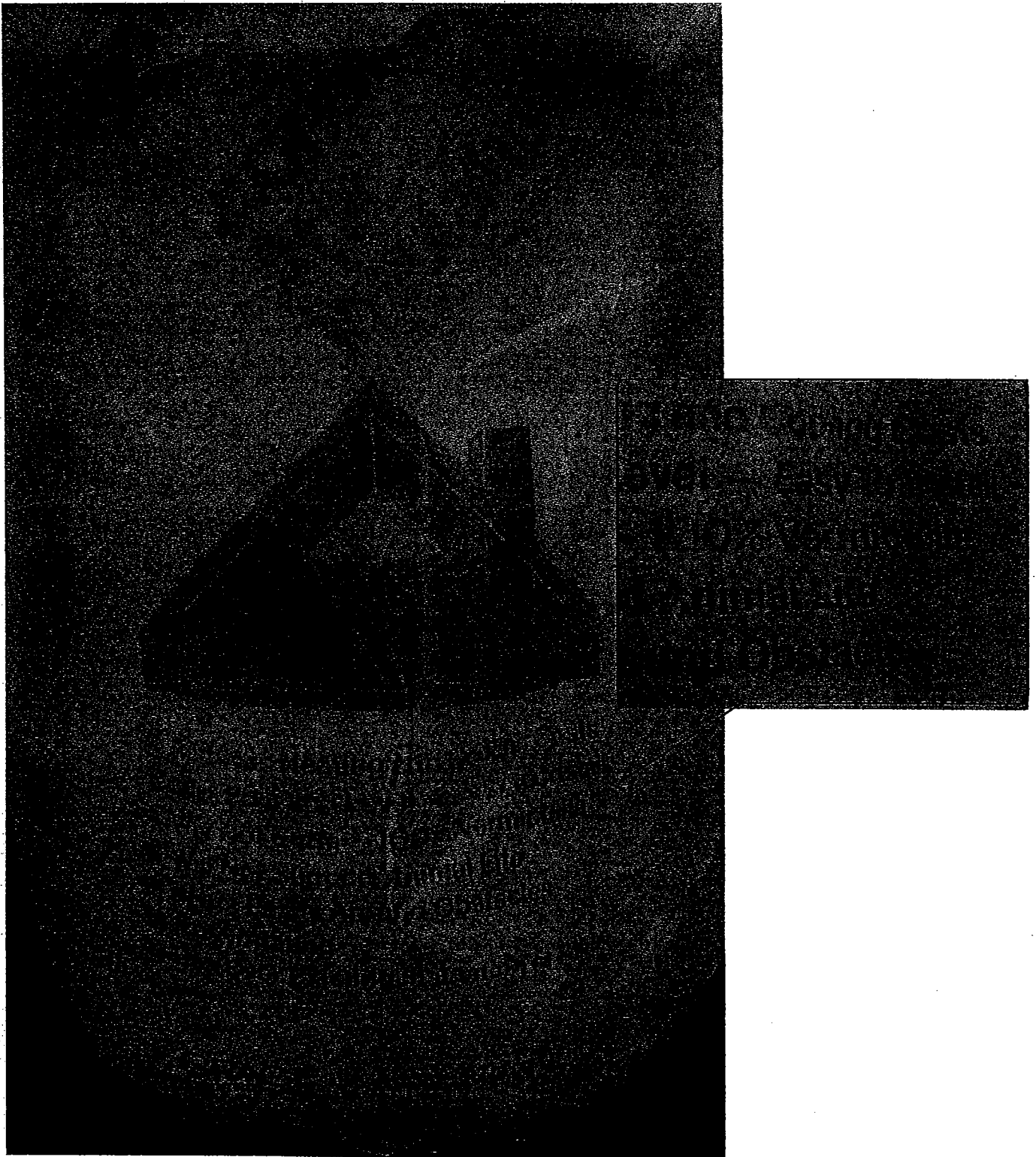
and—Zonolite Attic Insulation fills to fit with no cutting, no tacking, no stapling. Just pour it, level it—

and leave it! First-cost of installing this insulation is low. And first-cost is the last. Zonolite pours to stable density. Stays effective with no deterioration.

Underwriters' Laboratories, Inc. Fire Hazard Classification for Zonolite Vermiculite Attic Insulation:

Flame Spread.....	0
Fuel Contributed.....	0
Smoke Developed.....	0

# EXHIBIT 3



Product Packaging from Spokane, Washington, homeowners Ernest & Doris Matthews.

# EXHIBIT 4



C A M B R I D G E

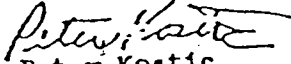
Date: March 11, 1969

To: R. W. Stettin

From: Peter Kostic

cc: R. M. Vining  
C. P. Dugan  
R. A. Kulberg

The following article which appeared in the March issue of Safety Engineering is for your information. I think it would be well at this time, with the advice of counsel, to consider applying a warning or precautionary label or statement on all containers of products containing vermiculite. This may aid our defense in cases of product liability claims. The attached extra copies are for distribution as you wish.

  
Peter Kostic

PK:vag



■ Congressman Edward J. Patten of New Jersey has introduced H.R. 2503, "a bill to promote the safety of workers engaged in making asbestos products for shipment in commerce, and for other purposes. It is substantially the same as the Asbestos Safety bill he introduced, September 14, 1967.

Last year when hearings were conducted on the proposed Occupational Health and Safety Act, Dr. Irving J. Selikoff of the Mt. Sinai School of Medicine testified in favor of the bill before the House Select Subcommittee on Labor. He is one of this country's greatest experts on asbestosis, his research covering not only workers in asbestos, but members of their families and persons living near asbestos plants or facilities using asbestos products.

Dr. Selikoff told of studies he had made of some 632 members of two New York-New Jersey Asbestos Workers Union locals. According to medical yardsticks, over a 19-year period, 203 should have died. In fact, 255 did die. Of that number, 37 could have been expected to die of cancer. In fact, 95 died of cancer.

In addition, a disease which was considered so rare it was not separately coded in the International Classification of Causes of Death has been unmistakably associated with asbestos and the number of cases has increased significantly. This is mesothelioma—a highly malignant tumor.

One disturbing factor in mesothelioma is the rather indirect exposure a number of its victims had. In some cases studied in London, 31 had worked with asbestos, but nine merely lived in the household of an asbestos worker! Eleven people lived within ½ mile of an asbestos factory!

Early in 1968, Dr. Maxwell Borow reported in the "Journal of the American Medical Association" on 17 mesothelioma cases in New Jersey. Fifteen were asbestos workers, two lived near an asbestos factory.

Dr. Selikoff's statement told of other studies in South Africa. There were additional remarks by these

doctors regarding the possible exposure of all construction workers and of the bystander who unknowingly breathes in the poisonous dust.

The call of Congressman Patten against asbestosis has not gone unheeded. Johns-Manville, the U.S. Public Health Service, the International Association of Heat & Frost Insulators and Asbestos Workers, and the Mt. Sinai School of Medicine have joined together in an effort to eliminate or at least measurably reduce the exposure of some 200,000 asbestos workers. This will certainly result in greater protection to the entire construction industry and the general public too.

ZZ 000142

# EXHIBIT 5

DRAFT

REC'D  
MAR 27 1980

CPD. ENG.

CONFIDENTIAL LEGAL MEMORANDUM  
(Attorney's Work Product)

March 27, 1980

REC'D  
APR 2 1980

CPD. ENG.

TO: E. S. Wood

FROM: O. M. Favorito

cc: R. M. Vining  
F. W. Eaton  
D. C. Evans

Work  
Copy

Re: Asbestos in Consumer Products

Enclosed herewith is a draft of a letter to Dale Ray of the Consumer Product Safety Commission following up on our telephone conversation with him on March 12, 1980. The letter incorporates the steps taken by CPD to reduce user asbestos fiber exposure to the maximum extent feasible as detailed by your memorandum of March 24. I would appreciate comments by all recipients of the letter as soon as possible. I specifically call Fred Eaton's attention to Annex A which I have edited from prior versions and to Note 1 on page 7 of Annex A to the letter which requires explanation of the South Carolina data results for tests A(1)(a) and A(2)(a).

You will note that the letter makes no reference to the caution label which has been placed on the Zonolite attic insulation bags as well as those placed on the Terra-Lite vermiculite and Redi-Earth bags. My reason for omitting reference to the caution labels is that I have doubts as to whether the caution labels are very helpful to our case.

The data which we are submitting to CPSC acknowledges the fact of asbestos fiber emissions from attic insulation during installation. The caution label used on attic insulation does not specifically identify asbestos and, accordingly, could be viewed by the CPSC as being inadequate warning of the risks which may be associated with use of this product. The warning label states:

E. S. Wood

- 2 -

March 27, 1980

**CAUTION**

Avoid Creating Dust  
Breathing Dust may be Harmful to your Health  
Use with Adequate Ventilation,  
or with Respiratory Protection

I recognize that the caution label was placed on the bag out of a genuine desire by CPD to alert users to a potential hazard, and that if users did avoid breathing dust they most likely would avoid breathing any asbestos fibers. Therefore, the warning would have accomplished its purpose of mitigating user exposure to asbestos fibers which might be present in attic insulation. I also recognize that it is CPD's belief that the fiber exposure associated with reasonably foreseeable use of attic insulation does not present any unreasonable risk to the user given that exposure to asbestos fibers which have been measured are at extremely low levels for short periods of time and represent only a two or three time total lifetime exposure.

Nevertheless, CPD should consider revision of the caution label to specifically identify the possibility of asbestos fiber exposure and to identify more specifically the type of respiratory protection required when installing attic insulation. According to Harry Eschenbach, the prescribed form of dust mask necessary to be utilized where asbestos fibers are present is a type of mask which is for use in preventing pneumoconiosis.

The caution label presently being used on Terra-Lite vermiculite and Redi-Earth packages reads as follows:

**CAUTION**

Avoid Breathing Dust by Premoistening  
or Using with Adequate Ventilation  
Breathing Dust may be Harmful  
to your Health

This label should be reviewed as should the desirability of placing a caution label on the product Pool Cushion.

  
O. M. Favorito

OMF/MS  
Enclosure

*Per E. TREWHELLER 3/27/80*

DRAFT  
3-26-80

TO OMF  
COPY TO ESU

ED TREUMELLA BELIEVES  
DUST LABEL IS ON BILL COSMAN  
BUT IS CHECKING R/SUMNER  
Will Advise.

JE 3/28/80

Mr. Dale Ray  
Consumer Product Safety Commission  
Economic Program Analysis Division  
Room 656-B  
Washington, D.C. 20207

Dear Mr. Ray:

Reference is made to our conference call of March 12, 1980 in which we reviewed with you the results of W. R. Grace & Co.'s (Grace) testing to determine the extent of asbestiform tremolite fiber release associated with use of Grace vermiculite in consumer products. During our conversation you requested that we set out the details of Grace's fiber exposure test methodology and test results and indicate the extent of Grace's fiber reduction efforts.

As you know, tremolite is a tramp mineral contaminant which is associated with vermiculite and which Grace has been attempting to reduce to the maximum extent feasible. Since 1970 Grace has expended capital costs in excess of \$15 million relating to extraction of worthless materials and contamination and/or airborne fiber reductions in its vermiculite mining, milling, and expanding operations. A substantial part of these capital costs was associated with the construction by Grace of a new vermiculite mill at its Libby, Montana mine which uses wet screening and other wet ore recovery processes designed to reduce the asbestiform tremolite contaminant associated with vermiculite.

9/74  
MILL  
Subsequent to the new mill's coming on stream in early 1975, Grace took further steps to remove fine particles containing contamination from the vermiculite ore concentrate and to prevent such particles from being recycled into the ore concentrate. Contemporaneously with the contaminant removal steps taken at the mine, changes were made in the exfoliation process equipment used at Grace's vermiculite expanding plants which process Grace vermiculite ore for use in both consumer and industrial products. These changes provided for further screening, separation, and removal of heavier unexpanded residual high density material which may contain asbestiform tremolite contaminant. Also, by use of bag houses and other dust and filter removal equipment additional reduction of the tremolite fiber contamination of expanded vermiculite end product is accomplished.

A BAG HOUSE IS ONLY A CONTROL DEVICE, STATEMENT INCORRECT

DELETE

Mr. Dale Ray

- 2 -

Because of our concern over exposure to asbestiform fibers, Grace has taken the further step, with regard to its Zonolite<sup>(R)</sup> attic insulation product, of adding a binding wetting agent to further reduce dust and exposure to asbestiform fibers during installation of this product.

The foregoing efforts to reduce asbestiform tremolite contamination to the maximum extent feasible have resulted in consumer products containing Grace vermiculite which in reasonably foreseeable use do not generate unreasonable risks for users. This has been verified by Grace's fiber exposure tests of consumer products containing expanded Grace vermiculite ore. All measurements were made by the NIOSH-approved technique as set forth in 40 CFR §1910.1001, paragraphs (e) and (f), utilizing the membrane filter method at 400-450 X (magnification) (4 millimeter objective) with phase contrast illumination. The results of these tests were as follows:

Product	Fibers Detected
Terra-Lite <sup>(R)</sup> Vermiculite	None detected
Redi-Earth <sup>(R)</sup>	None detected
Lightweight Fertilizer (Scott's Turf Builder)	None detected
Zonolite Attic Insulation	Some fibers detected during installation

KEEP IN LINE

The actual test protocols and results of the tests are set forth in Annex A to this letter. No tests were performed on Grace's product Pool Cushion<sup>(R)</sup> which is used for protection of the base of vinyl-lined above ground swimming pools since this use is carried on out-of-doors and, typically, involves use of no more than 3-12 bags of vermiculite, depending on the size of the pool.

As noted, the only Grace product in respect of which fibers were detected was the Zonolite attic insulation product and this was at very low levels and only during installation. Since this product is unlikely to be used more than two or three times during an entire lifetime and then only for exposure times which would not be expected to exceed two hours in any one case, the lifetime dosage is many orders of magnitude lower than any promulgated government standard applicable to tremolite fiber emission exposure.

DELETE

## Attachment

ANNEX A

USER EXPOSURE TO FIBROUS TREMOLITE  
IN VERMICULITE CONSUMER PRODUCTS

TEST DATA

I. TEST PROTOCOL

A. Horticultural Products

1. Modes of Consumer Home Use Of Terra-Lite(R) Vermiculite(a)

(a) Mix and fill pots to simulate consumer preparation of a mix of 50% peat moss and 50% Terra-Lite by scooping equal volumes of materials out of separate packages and depositing on work surface. Hand mix to reasonable uniformity and fill fifteen (15) 4" diameter flower pots in 15 minutes. Press down to firm up the soil to hold the plant. The 15 dried out pots were then brought into the work area where three separate procedures were performed. Fiber counts were taken during each of these three procedures. Five pots were used for each of the three procedures..

(b) Knock Out and Disposal - To simulate the consumer who does not intend to reuse the soil. Invert the pot and rap on the working surface so that the soil drops out. Brush the mound of soil off the bench into a disposal container. Take a paper towel and wipe inside of pot so that it is clean for reuse and dispose of the paper towel. In this procedure, contents of five pots will be disposed of during the 15 minute test period.



(c) Knock Out and Reuse for Potting Other Plants -

Simulate a consumer who will reuse the potting soil. Wrap pot on work bench by hand and break up the lump of soil to make it similar to its original free-flowing condition. Repeat this five times. Combine all soil into one pile; then proceed to refill pots by scooping the material back in and tamping it down. In this 15 minute test procedure, five pots will be filled.

(d) Knock Out and Blend with New Potting Soil -

Simulate a consumer who will blend old with new potting soil. Wrap pot on work bench by hand and break up the lump of soil to make it similar to its original free-flowing condition. Repeat procedure five times. Obtain additional potting soil to replace the volume of the dried soil disposed of. Place new soil on top of the old soil and mix together by hand. Use this mix to fill pots. During this 15 minute test procedure, 10 pots are filled.

2. Consumer Use of Redi-Earth(R)

(a) Same procedure as 1 (a) Terra-Lite Vermiculite except substitute pre mixed Redi-Earth(b) as the soil medium.

(b) Same procedure as 1 (b) Terra-Lite Vermiculite

(c) Same procedure as 1 (c) Terra-Lite Vermiculite

(d) Same procedure as 1 (d) Terra-Lite Vermiculite

B. Application of Lightweight Fertilizer(c)

1. GENERAL

A five building apartment complex was selected as the test site. With over 100,000 sq. ft. of grass area, the site allowed air sampling while fertilizing over an extended period of time.

The tests were conducted with two people: one filling spreader hopper and fertilizing, and the other maintaining log sheets, time and pump calibration.

2. Application of Lightweight Lawn Fertilizer

Two sampling pumps with filter cassettes located in the left and right breathing zones were worn by the applicator during the sampling/fertilizing period. The applicator filled the spreader hopper to within 2" of the top and refilled when the hopper was approximately 3/4ths empty. Using a new Model 35 Scotts spreader with guide markers, the applicator spread thirteen (13) bags of lawn fertilizer at the normal coverage application rate (5000 ft<sup>2</sup>/bag).

C. Home Installation of Vermiculite Attic Insulation(d)

1. General

Vermiculite Loose Fill attic insulation is generally purchased in quantities of 10-100 bags per home to "retrofit" or "add to" existing insulation in an existing home. Seldom is vermiculite loose fill installed in new

construction. To determine consumer exposure to tremolite fibers, the following series of tests by home owners were intended to indicate actual exposures under a variety of conditions.

2. Area Engineering Samples

Engineering samples were taken as follows:

(a). Prior to installing vermiculite attic insulation, monitor attic space for 5-6 hours.

(b). Approximately two months after installing insulation, monitor attic space for 5-6 hours.

3. Pouring/Leveling Vermiculite Loose Fill in Attic

Each test home utilized 40-70, 3 cf bags of vermiculite attic insulation. The installer was monitored during the placement of insulation.

Initially, place 15-20, 3 cf bags in the attic. The installer poured all bags and levelled insulation with a wooden hand screed or one with a handle to push insulation back into roof eaves. Additional bags were brought to the attic in lots of 15-20 bags as required.

NOTES:

- (a) Terra-Lite vermiculite is composed of Grace vermiculite size #3 ore from either Libby, Montana or Enoree, South Carolina.

NOTES: (cont'd)

- (b) Redi-Earth is basically a combination of 50% peat moss and 50% vermiculite size #3 ore from either Libby, Montana or Enoree, South Carolina with plant nutrients added.
- (c) Lightweight fertilizer utilizes vermiculite size #4 ore from either Libby, Montana or Enoree, South Carolina.
- (d) Attic insulation is composed primarily of Grace vermiculite size #1 or #2 ore from Libby, Montana.
- (e) Pool Cushion which was not tested utilizes vermiculite size #3 ore from either Libby, Montana or Enoree, South Carolina.

II. RESULTS (See notes 1 and 2)

<u>TEST DESCRIPTION</u>	<u>PERSONNEL AVE. EXPOSURE (f/cc)</u>	<u>PERSONNEL TWA EXPOSURE (f/cc)</u>
<b>A. <u>HORTICULTURAL PRODUCTS</u></b>		
<b>1. <u>Consumer Use of Terra-Lite Vermiculite</u></b>		
✓(a) <u>Mix and Fill Pots</u> South Carolina Montana	<0.29(See note 1) <0.14	<0.073 <0.035
(b) <u>Knock Out and Disposal</u> South Carolina Montana	<0.14 <0.14	<0.035 <0.035
(c) <u>Knock Out and Reuse</u> South Carolina Montana	<0.14 <0.14	<0.035 <0.035
(d) <u>Knock Out and Blend</u> South Carolina Montana	<0.14 <0.14	<0.035 <0.035
<b>2 <u>Consumer Use of Redi-Earth</u></b>		
✓(a) <u>Mix and Fill Pots</u> South Carolina Montana	<del>0.29</del> <del>0.145</del> (See note 1) <0.14	0.036 <0.035
(b) <u>Knock Out and Dispose</u> South Carolina Montana	<0.14 <0.14	<0.035 <0.035
(c) <u>Knock Out and Reuse</u> South Carolina Montana	<0.14 <0.14	<0.035 <0.035
(d) <u>Knock Out and Mix With New Soil</u> South Carolina Montana	<0.14 <0.14	<0.035 <0.035
<b>B. <u>LIGHTWEIGHT FERTILIZER</u></b>		
<b>1. <u>Application of Lightweight Fertilizer</u> With Montana derived vermiculite</b>		
	<0.03	<0.008

ON THE SAMPLING DATA SHEET (ORIG.) ONE SAMPLE RESULT WAS 0.29 AND THE OTHER <0.29<sup>6</sup> WITH THESE VALUES OUR RESULTS WOULD BE 0.145. HOWEVER IN REVIEWING LAB WORK SHEETS, NO FIBERS WERE OBSERVED IN EITHER SAMPLE. THIS WAS A REPORTING ERROR

**C. Home Installation of Vermiculite Attic Insulation****1. Engineering/Area Samples**

<u>Home</u>	<u>Type Home</u>	<u>No. Bags</u>	<u>Fiber Concentration (f/cc)</u>	
			<u>Before</u>	<u>Attic</u> <u>After</u> (see note 3)
F	Colonial	55	0.03 (see note 4)	<0.01
N	Cape	30	NO TEST	<0.01
S	Ranch	64	<0.01	<0.01
W	Colonial	70	<0.01	<0.01

**2. Installer Personnel Samples**

<u>Home</u>	<u>Type Home</u>	<u>Personnel Exposure (f/cc)</u>	
		<u>Ave</u>	<u>TWA</u> (see note 2)
F	Colonial	2.597	0.649
N	Cape	0.971	0.243
S	Ranch	2.115	0.529
W	Colonial	1.746	0.436

**NOTES:**

1. The symbol < (less than) indicates no fibers were observed in the counted fields. However, for conservatism, it is Grace's practice not to report zero (0) f/cc, and one (1) fiber is "plugged into" the analysis calculations. The < symbol clarifies the quantitative value and indicates no fibers were observed in the counted fields.

[Explain South Carolina data results for A(1)(a) and A(2)(a).]

*H ON P-8 72*

Each test of horticultural products was repeated using vermiculite ore from each of Grace's mining locations, viz., Libby, Montana and Enoree, South Carolina. The vermiculite ore used in attic insulation originates from the Libby, Montana mine as does that purchased by O. M. Scott from Grace for use in its lightweight lawn fertilizer.

NOTES: (cont'd)

2. In calculating the time weighted average (TWA) for attic insulation, it is assumed the installer or home owner would work in the attic pouring vermiculite loose fill two hours in one 8-hour work day. Although TWAs apply to industrial work exposure, TWAs overstate consumer exposure to fibrous forms of tremolite containment. TWAs are used as a life time average exposure taking into consideration all phases of the working environment. In the case of a consumer pouring vermiculite attic insulation, this is a one or two time limited exposure.
3. In addition to results tabulated, two additional tests indicate no fibers detected in attics insulated with vermiculite loose fill six hours and approximately nine years after installation.
4. In all home attics tested, vermiculite attic insulation was added as a retrofit insulation over existing glass, mineral wool or cellulose insulation. In home "F" a fiber was observed in the counted fields prior to pouring vermiculite attic insulation. Although length and aspect ratio fell within the fiber definition, it is believed it was airborne glass fiber from existing insulation.

March 26, 1980

THE BASIC FORMULA FOR CALCULATING FIBER CONCENTRATION (f/cc) IS  $\frac{\text{NO. FIELDS COUNTED} \times \text{CONSTANT}}{\text{TOTAL AIR VOLUME SAMPLED}}$ . THEREFORE, QUANTITATIVE VALUES VARY AS A RESULT OF THE - 8 - NUMBER OF FIELDS COUNTED AND/OR TOTAL AIR VOLUME SAMPLED, WITH EXCEPTION OF MIXING AND FILLING POTS WITH SO. CAROLINA DERIVED VERMICULITE (A-1-a & A-2-a), 100 FIELDS WERE COUNTED, ONLY 50 FIELDS WERE COUNTED IN TEST ITEM A-1-a AND A-2-a.

# EXHIBIT 6



### BINDER DEVELOPMENT PROGRAM

This memo is a general discussion of some aspects of the Binder Development Program. It covers the areas of background, binder objectives, trials and testing.

#### I. BACKGROUND

The current OSHA Standard requires product labeling where a manufacturing plant is found to have employee exposures to airborne fiber concentrations in excess of the current tolerance level. Following an OSHA inspection in January, 1976 of the Omaha expanding plant we are now under citation for not labeling our product. We have until December 30, 1976 to either bring the Omaha plant fiber concentrations below the tolerance level, show why we should not label the product, or commence labeling of product.

It is believed that product labeling would have a serious, adverse, and irreversible effect upon customer acceptance of our products. The current OSHA Standard specifies that OSHA will accept the addition of a binder as being one method of removing the product labeling requirement. It is understood that OSHA will also accept data from air sampling of representative product usage if that data shows user exposures below current tolerance levels. It is possible that binder modifications might be made part of the standard formula for some products, irrespective of OSHA labeling requirements.

#### II. OBJECTIVES

Accordingly, the overall objective of the binder program is to have working binders and the equipment for their application on hand and usable with Libby products which may need them before the end of this year. Initial Libby product focus will be on Masonry Fill followed by straight #2 (attic fill, professional horticultural, and industrial). Beyond this very general objective, it is possible to list a number of more specific, working objectives in binder development. The following list of objectives is idealized; all may not be attainable, some may prove mutually exclusive.

1. Binder must be sufficiently effective in use to put airborne fiber concentrations under the tolerance level in representative jobsite conditions.

2. Binder and its delivery system should pose no appreciable equipment complexity for the expanding plant, and successful binder application should be relatively insensitive to mis-settings of equipment controls. Ideally, the delivery equipment would either already exist (asphalt/silicone sprays for MF) or be simple to add.
3. Binder itself not be a carcinogen or pose other hazards such as flammability, either by itself or in its foreseeable storage, handling, application to the product, and use of the product.
4. Binder(s) not appreciably interfere with free pouring and dispersion.
5. Product with binder have a shelf life of not less than three months before decline in binder's effectiveness (if any decline).
6. Product with binder be non-reactive with kraft or polyethylene packaging or with water.
7. Least cost — a current increase of less than 10¢ per bag, applied. If this objective cannot be met, the least cost working binder must still be developed.
8. Binder(s) should not be "esoteric", preferably would not be subject to wide price swings, be locally available, and be stable in storage.
9. Binder(s) not have adverse effect on water repellency where required (such as masonry fill) or on water mixability where required (such as Zonolite Concrete or Monokote).
10. Binder used for horticultural applications should not interact with other soil ingredients.

### III. TRIALS

Trials are to start in Trenton with Masonry Fill. Trenton was picked for large size, variety of furnace types, Libby ore usage and proximity to Cambridge. Plant costs related to trials will be charged to their development account. Masonry Fill was selected as the first product because it is already made with binders and plants have application equipment installed.

It is anticipated that the plant trials sequence will approximate the following:

1. Standards Establishment

- a. Adjustment to standard operating conditions per current product formula.
- b. One pound sample taken of ore concentrate going to furnace for subsequent Cambridge quantitative analysis.
- c. Representative employee air sampling for fiber count or other contaminant while standard product is running.
- d. Representative engineering air sampling for fiber count or other contaminant may also be done if there are points of interaction.
- e. Bagging off of marked standard samples for subsequent Cambridge quantitative analysis and air sampling analysis (approximately 10 bags).

2. Trial

- a. Trial formula with binder is believed "make-able", preferably has already been tried on a small scale. (Trial formulas previously communicated to plant manager.)
  - b. Adjustment of operating conditions to trial formula.
  - c. When process appears stabilized at trial formula,
  - d. Repeat employee air sampling,
  - e. Repeat engineering air sampling, if any. (Note: These samples will be marked "experimental" to prevent confusion with samples representative of a plant running standard product formulas.)
  - f. Bagging off of marked experimental samples for subsequent Cambridge air sampling analysis (approximately 10 bags).
3. Proceed with subsequent trials of other trial formulas, if any (repeat #2 above).
4. At end of trials on this combination of product and equipment:
- a. Resume operating conditions to current product formula.
  - b. One pound sample of ore taken.

5. Assumptions

- a. At this point, it is assumed plant and equipment are back at normal.
- b. It is also assumed that all the product run and bagged during trials which was not destined to be shipped to Cambridge is usable for the intended product application. If so, it will be put into inventory for subsequent sale through normal channels but to only one job site or customer.
- c. Plant will make copy of applicable invoice and mail to Cambridge.
- d. Cambridge will follow-up with customer to see whether comments are volunteered.

## IV. TESTING

This section concerns the Cambridge testing of ore concentrate, standard formula product, and trial formula products samples taken under Section III, TRIALS, above.

The one pound ore concentrate samples will be saved for possible quantitative analysis, as needed, so as to determine tremolite content of the Libby ore at that plant used on the day of trials, if necessary. Variations in ore concentrate tremolite content might affect expanded product release of fibers. These samples are taken to facilitate comparisons between trials taken on different dates if necessary. Two samples are taken to address the possibility that ore concentrate use during a trial might have bridged the "dividing line" between two different carloads in the silo. These samples would also add to our general knowledge concerning variables of tremolite content in Libby ore. It is noted that we are concerned not with total tremolite, but non-asbestos tremolite, asbestiform non-airborne tremolite, and asbestiform tremolite which could be airborne.

The one pound sample of expanded product, under current formula, will similarly be saved for possible quantitative analysis. There are two intents. First, to add to our general knowledge of tremolite content in expanded product compared directly to the ore concentrate from which it was made. Second, to again facilitate comparisons between different trials taken on different dates, same as intent of ore concentrate samples.

The employee (and engineering) air samples would be for two purposes. First, making sure the trial formulas do not adversely affect plant working environment in some unforeseen way. Second, assuming that the binder usage lowers airborne fiber concentration in the plant, to obtain a preliminary indication of how much. It is conceivable that binder utilization might serve as back-up for dust pick-ups.

The air sampling of standard formula product and trial product is for purposes of assessing the concentrations of airborne fibers released when the product is dumped or poured. Air sampling to date of product use, both actual or jobsite and simulated, has served to indicate which products may pose problems under some conditions. A problem, however, with job site testing is that the test conditions can vary a great deal. It would be unfortunate to draw conclusions about various binders' effectiveness versus standard formula if the data reflected much influence from varying test conditions.

Accordingly, a test facility will be set up here in Cambridge so as to test all trial (and standard formula for comparison) material under relatively controlled conditions. Test facility fiber counts will not necessarily duplicate fiber counts on any specific job site. However, we now know representative ranges of fiber counts on job site for some products. It is assumed that a trial formulation with binder which performed favorably versus standard formula in the test facility would be expected to do so in the field, too. Once one binder formulation has been found which yielded the order of magnitude improvement sought in the test facility, that would be verified on job site.

1. The characteristics of the test facility would be as follows:

- a. inside and enclosed, little draft, "closable"
- b. minimum floor area approximately 250 sq. ft.
- c. minimum bay height 8 to 12 feet
- d. adjacent storage area for bagged goods

2. General equipment would include:

- a. elevated hopper capable of holding a minimum of 5 bags
- b. step ladder
- c. an adjustable discharge duct which would be adjusted to approximately 1 to 3 cu. ft./minute rate
- d. unrestricted drop of 4 to 5 feet into
- e. movable dumpster beneath with provision to pour used material into disposal bags
- f. cannister type shop vacuum approved for fiber retention
- g. ideally, a means of exhaust fan ventilation of test facility after test

3. Test equipment would include:

- a. two air pumps mounted on pipe stands approximately one foot from material stream set about 180° from each other
- b. one pump mounted on a pipe stand approximately 3 feet from material stream set at midpoint from other two pumps and down-wind (if there is any)
- c. the intent would be to have no air currents in test facility but there probably will be

4. Test procedure (with personnel wearing NIOSH approved respirators in area of test facility)

- a. vacuum facility with cannister in it
- b. wait five minutes
- c. take one 15 minute background air sample at remote pipe stand 3-b (above)
- d. load hopper from bags attempting to minimize dust creation

- e. activate 3 pumps, commence material discharge, leave test facility and close door
- f. at end of material discharge, terminate above 3 samples
- g. take one 15 minute air sample at remote pipe stand, (door closed)
- h. terminating above sample, leave door open and activate exhaust fan until visible dust gone
- i. dispose of test material and vacuum test facility, retaining other half (5 bags) of trial material until after fiber counts have been taken

V. ANALYSIS OF SAMPLES

1. Ore Samples

- a. All samples will be examined by X-ray diffraction to determine presence or absence of tremolite.
- b. If appropriate interest and time develops, the X-ray diffraction pattern will be examined more closely and a quantitative determination of total tremolite will be made.

2. Expanded Samples

Same as 1 above.

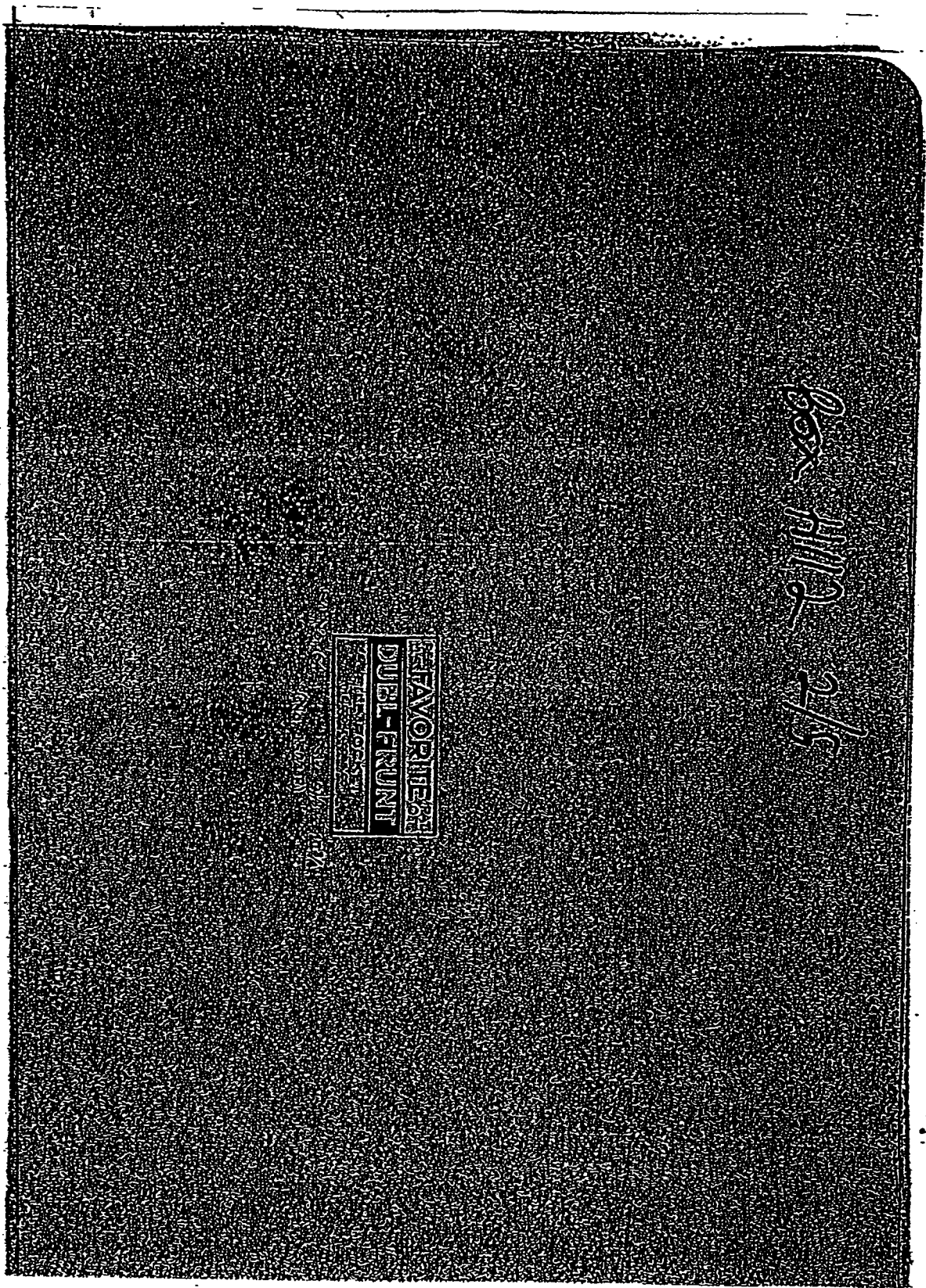
3. Air Samples

All will be tested by the NIOSH approved procedure for the analysis of airborne fibers.

R. H. Locke

5/17/76

(revised to H. A. Brown comments 5/11/76 and H. C. Duecker comments 5/12/76)



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# EXHIBIT 7

UNITED STATES BANKRUPTCY COURT  
DISTRICT OF DELAWARE

IN RE: ) Case No. 01-1139 (JKF)  
 ) Chapter 11  
W.R. GRACE, et al., )  
 ) Bankruptcy Courtroom No. 2  
 ) 824 Market Street  
Debtors. ) Wilmington, Delaware 19801  
 )  
 )  
 ) September 23, 2002  
 ) 10:12 A.M.

TRANSCRIPT OF OMNIBUS HEARING  
BEFORE HONORABLE JUDITH K. FITZGERALD  
UNITED STATES BANKRUPTCY JUDGE

APPEARANCES :

For Debtors: Reed Smith  
By: JAMES J. RESTIVO, JR., ESQ.  
JAMES W. BENTZ, ESQ.  
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Kirkland & Ellis  
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Pachulski Stang Ziehl Young & Jones  
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For Asbestos P.I.  
Claimants:

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By: MARK HURFORD, ESQ.  
1201 Market Street, 15th Floor  
Wilmington, Delaware 19801

Audio Operator: Sherry Scaruzzi

Proceedings recorded by electronic sound recording,  
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Appearances:  
(Continued)

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JAY SAKALO, ESQ.  
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Tarlov & Mondell  
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& Brickman, LLC  
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Appearances:  
(continued)

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and Abel, P.A.

By: STUART COHEN, ESQ.

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Wall Street Plaza  
New York, New York 10005-1875

INDEX

AGENDA ITEMS

Page

Items 1 through 45	5**
Item 46	13*
Item 47	13
Item 48	13
Item 49	28

MISCELLANEOUS ITEMS

Z.A.I. scheduling	79
English and American Insurance Company discovery	86
Full captions on documents	89
Business plan discussion	91
Schedule of dates for 2003	94

\*Continued to October 28, 2002, 10 A.M.

\*\*Continued to November 25, 2002, 10 A.M.

THE COURT: This is the matter of W.R. Grace, Bankruptcy Number 01-1139. There is an agenda set for this afternoon. Will anyone who speaks when you speak please enter your appearances. Good morning.

MS. BAER: Good morning, Your Honor. Janet Baer on behalf of W.R. Grace.

Your Honor, I believe the first 45 items on the agenda have to do with fee applications.

THE COURT: Yes.

MS. BAER: I have spoken with Mr. Smith. He is not on the phone but will be -- is available on the telephone if you'd like to speak with him or have him participate. He did not feel it was necessary.

What he would like to do is have a little time on these first three interim periods. He is issuing reports now.

The reports are being responded to by counsel. The thought was that a hearing be set for later, perhaps near or if not at the November omnibus hearing. Your Honor, in that respect, obviously all counsel are concerned they'd like to get the remaining 20 percent of fees not paid by the end of the year. We've been waiting for almost a year and a half for some of the fees. So, I would say the first opportunity we could get to

is hazardous. And so it is true that we have objected to some of the requests on the grounds of relevance and overbreadth because it hasn't been limited to the finished product.

Everyone agrees, Your Honor, at least in the Barbanti preliminary injunction hearing, their experts and our experts, this material, the finished product, contains by weight one one-hundred to one one-thousandth of one percent of asbestos, if it's in there at all. And so to dig out documents and produce documents relating to what happened when you mine the material clearly is beyond the scope of what this Court is trying to determine what does science tell us about the Z.A.I. in the attic.

And, therefore, we have not attempted to give environmental documents, Libby disease documents, mining documents, et cetera.

We do agree and have agreed with Mr. Westbrook in his comment at the August 26th hearing, he does need testing related to Z.A.I. We've agreed to give him testing related to Z.A.I. and there are a lot of documents related to that. And he's going to get them.

They've been in our repository now for two weeks, Mr. Turkewitz plus three individuals, although Mr. Turkewitz left after a couple of days and the individuals are there. We pointed them to 61 boxes of what traditionally and historically has been called notice documents in the non-Z.A.I. litigation.

# EXHIBIT 8



GRACE

Construction Products Division

TO: R. L. Asher/CPD Winter Park  
T. P. Felt/CPD Santa Ana  
W. K. Rogers/CPD Somerville  
B. C. Rugg/CPD Atlanta  
J. I. Stone/CPD Chicago

R. D. Dratnol/CPD Atlanta  
A. B. Ganahl/CPD Santa Ana  
M. G. Lopinto/CPD Somerville  
W. C. McDaniel/CPD Winter Park  
R. A. Schivinski/CPD Chicago

DATE: July 2, 1987

FROM: ~~J. M. Spiak~~

SUBJECT: July Progressive Builder

cc: J. A. Danneker  
J. S. Hamilton  
W. R. Hanlon

P. E. Korenberg  
R. H. Locke  
J. J. Worthington

The attached feature article highlights Attic Fill, which was discontinued in 1984. It seems likely that it may be circulated around.

*Joe*

J. M. Spiak

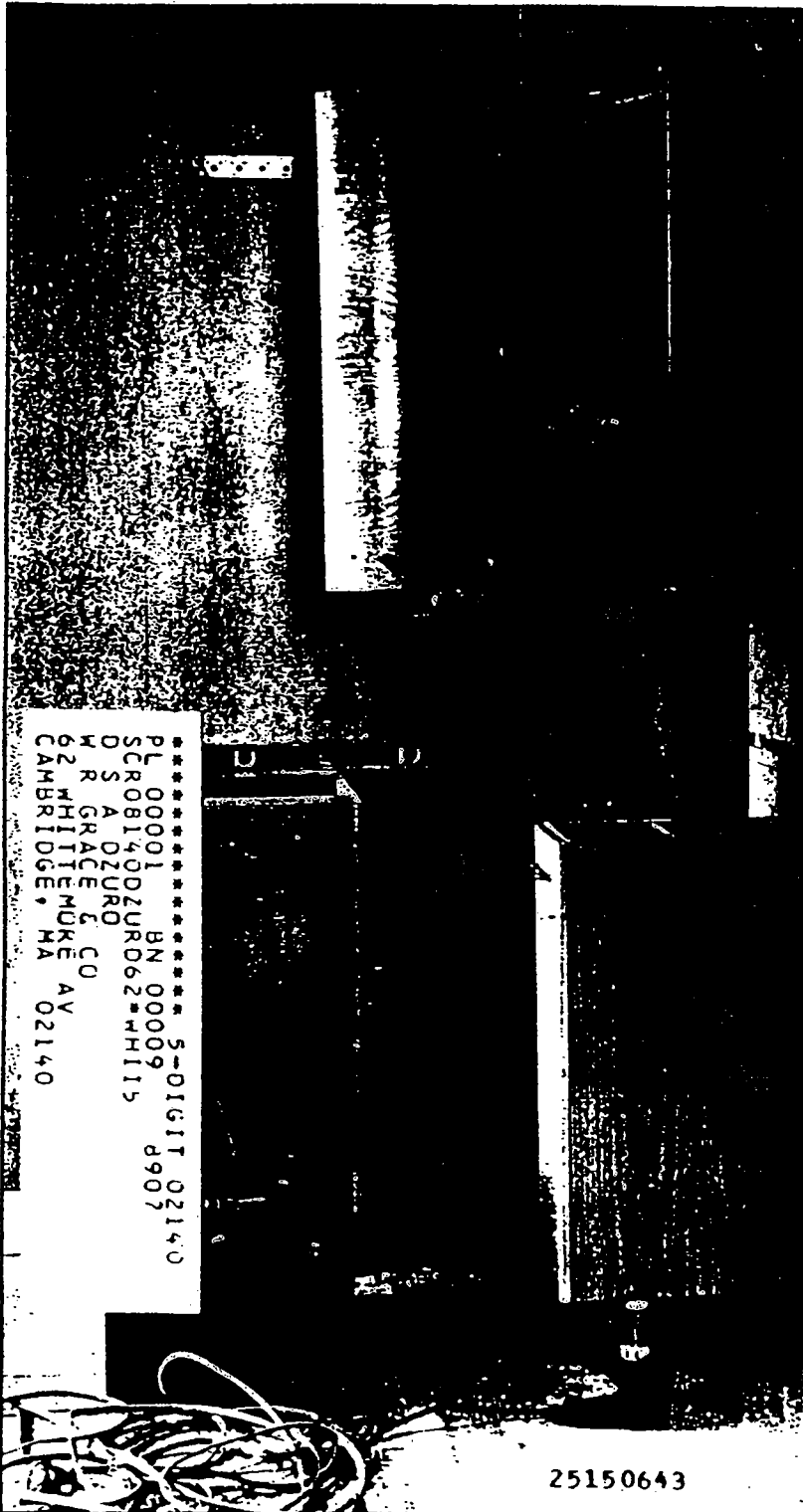
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## TECH TALK

# And Now, Vermiculite

For more than a decade, manufacturers and government agencies have known that vermiculite is laced with life-threatening asbestos fibers. Much of it is used as loose-fill insulation in attics. Although two-thirds of the vermiculite mined in the United States is used by the construction industry, little action is being taken to safeguard builders and remodelers who install or remove it.

Aware of the potential health threat, the U.S. Environmental Protection Agency (EPA) contracted Versar Inc., of Springfield, Va., in 1982 to assess the extent of human exposure to vermiculite. The environmental engineering and testing firm identified four active mines in the United States operated by W. R. Grace near Libby, Mont., and in Enoree, S.C., and by Patterson Vermiculite Co. in Enoree, and Virginia Vermiculite in Louisa County, Va.

The investigators acknowledged that "some vermiculite is not contaminated with asbestos." Nevertheless, the problem was so widespread that the Versar researchers assumed asbestos "is present as a contaminant in the vermiculite processed at all of the exfoliation plants."

When the mica-like material is mined, it resembles a closed book with pages of thin flakes bound tightly together. The ore is heated above 1000°F, evaporating the water trapped between the flakes. The vermiculite expands, or exfoliates, forming the final low-density, free-flowing product. In 1982, 52 exfoliation plants were operating in 32 states. Asbestos fibers were found floating in the air 30 miles away from the vermiculite processing and packaging plants.

The Versar Report estimated that 476,000 tons of loose-fill vermiculite insulation had been installed during the nine-year period ending in 1980, exposing 1.6 million installers and 4.2 million inhabitants to asbestos fibers. While these exposures are substantial, they fail to account for the houses insulated with vermiculite before 1972 or after 1980. The exposure of remodelers or



*Bundle of trouble: Tremolite asbestos fibers in vermiculite attic insulation were found in concentrations as high as 5 percent under a scanning electron microscope.*

homeowners who disturbed vermiculite already in place was not assessed.

### Weighting the risk

Experts assume that asbestos fibers in vermiculite are only dangerous when they are inhaled. Once the insulation is installed and settles, further exposure may be limited. Or, activity in attics, gaps in the framing, holes in ceiling light fixtures, and ventilating air currents could expose occupants to the invisible fibers.

"Usually the fibers are shorter than we would be concerned with in occupational safety at least as far as the standard goes," says Dan Crane, supervisor of asbestos operations at the Occupational Safety and Health Administration's (OSHA's) Analytical Laboratory in Salt Lake City.

The OSHA standard deals with fibers

that are 5 microns or longer and can be seen with a phase-contrast microscope. Based on these criteria, some vermiculite samples contain asbestos while others do not. When vermiculite samples are analyzed under an electron microscope, shorter and finer fibers are found. Whether these fibers should also concern OSHA is the subject of a raging controversy.

PROGRESSIVE BUILDER took three samples of vermiculite loose-fill insulation from the attic of an old building and sent them to Shelburne Laboratories, Inc., in Shelburne, Vt. Ninety percent of the lab's work relates to testing building materials for asbestos and assessing exposure levels.

Using scanning electron microscopy, Shelburne discovered the vermiculite contained tremolite, a dangerous form of asbestos, in concentrations of 1, 2, and 5 percent. The fibers were up to 200 microns long and less than 1 micron in diameter. While fibers longer than 5 microns can be inhaled and lodge in the lungs, fibers as long as 200 microns might not be breathable unless they break apart.

"I want to get more definitive data on actual percentages and develop some statistical numbers," said Robert Emerson, director and president of Shelburne Laboratories. Meanwhile, Emerson says, he doesn't believe people should be alarmed about finding vermiculite in their attics.

Bill Ewing, who leads the Asbestos Program Group at Georgia Tech Research Institute, states: "Nobody knows what the hazard would be for those cases where vermiculite containing asbestos is present in attics."

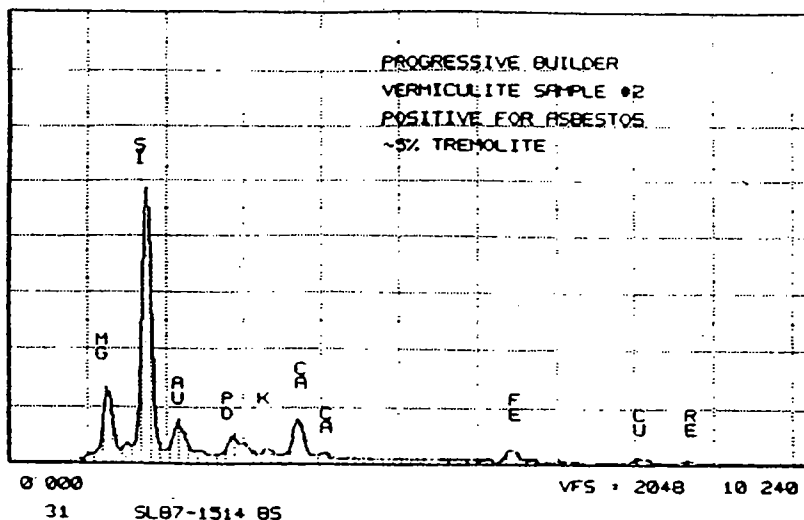
"What you don't want is some homeowner going up in the attic and trying to suck it up with a Shop-Vac or something. That would really stir it up," he says.

Ewing advises remedial action on a case-by-case basis. If the dust may be combining with the air supply in occupied spaces, action ought to be considered.

SHELBOURNE LABORATORIES

TUE 21-APR-97 11:06

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Spiked: Characteristic of tremolite asbestos, fibrous magnesium (Mg), silicate (Si) and small amounts of calcium (Ca) and iron (Fe) show up on the elemental scan of vermiculite insulation. Gold (Au) and palladium (Pd) are used to coat the sample for the analysis.

"If I took several samples and found 3-percent tremolite asbestos by polarized-light microscopy, and it was in an open attic where summer clothes were stored, which were shook out when they were removed from the attic, then I would say they had a problem."

#### Professional behavior

OSHA insists that workers not be exposed to levels of asbestos exceeding an average of 0.2 fibers per cubic centimeter over an eight-hour period.

If a contractor intends to disturb any building material suspected of containing asbestos, the law requires the materials be tested. If the bulk sample contains more than 0.1 percent of asbestos, and if the nature of the work seems likely to raise the airborne levels above 0.1 fiber per cubic centimeter over the course of eight hours, the contractor has to monitor the air, train workers, monitor their exposure, and comply with several other provisions. At 0.2 fibers per cubic centimeter, the permissible exposure level (PEL) has been reached, triggering the requirement for restricted entry areas on the job, the use of respirators, and protective clothing for the workers.

Wherever asbestos is present, the standards apply for these construction activities in buildings: demolition or salvage; construction; alteration; repair; maintenance; and renovation.

For all practical purposes, the regulations are aimed at big contractors work-

ing on major projects. Still, whenever vermiculite is encountered on the job, it should be tested.

"If the contractor finds it [asbestos] he must tell everyone else who is working there what was found," counsels OSHA's Don Crane.

Since January 17, 1987, any construction product with more than 0.1 percent asbestos has to be labeled. A materials safety data sheet apprises workers of the contents and advises them on precautionary measures.

In addition to OSHA's involvement, EPA is expected to decide by November 30 whether or not it should regulate the vermiculite manufacturing industry, which is presently not covered by existing standards except, possibly, indirectly through controls on the removal of asbestos in institutional buildings, commercial structures, and multi-family housing.

If a building or any part of it is to be demolished, contractors must search for asbestos. Suspicious materials must be examined under a microscope. EPA steps in if the material contains more than 1 percent asbestos.

"We will tell the contractor exactly what to do when removing it," says EPA chemical engineer John Copeland.

"Generally, you have to keep it wet and in special bags, which are specially labeled, and then dispose of it at a special landfill in a special way."

EPA regulations intentionally exclude apartments with less than four dwelling

units. However, state or local agencies have discretionary power to enforce regulations for single-family dwellings.

Vermiculite can be analyzed by competent laboratories. A test using a polarized-light microscope costs about \$36. Scanning electron microscopy is a better test. A laboratory will charge around \$100 for this test, which provides a chemical analysis of the substance as well as an identification of the fibers.

#### New products

Vermiculite insulation manufacturers are aware of the problem. Some producers have told EPA that their material contains much less than 1 percent asbestos. Others import vermiculite from mines believed to be free of asbestos-contaminated ores.

"Our insulation is clean," says Kim Schundler, marketing manager for the Schundler Company, a manufacturer of vermiculite insulation in Metuchen, N.J. The source of Schundler's ore is in South Africa. Schundler brushes off questions about the social implications of South African imports.

"It [vermiculite] is not on the list of embargoed items, and probably never will be, because the government uses it for national defense-type contracts, so it is exempt," he said.

In 1979 Eric Chatfield, formerly the head of the now defunct Electron Optical Laboratory at the Ontario Research Foundation, visited South Africa and personally collected vermiculite samples. Under carefully controlled conditions, he exfoliated and analyzed the material. None of the vermiculite was contaminated by asbestos.

Last year, Irina Sherman, project scientist with the Materials Characterization Group at the Ontario Research Foundation, examined vermiculite from South Africa for Ontario Hydro. Sherman found just a trace of asbestos.

"People were upset. They said, 'How come a few years ago it was stated that there is no asbestos and now you find some,'" Sherman said. "Basically, the [Chatfield] study was done a long time ago, and you don't know what's happening over the years when a mine is being explored."

While sweeping generalizations are impossible, the studies in Canada so far indicate that South African vermiculite is virtually pure.

Domestically, mines on the East Coast generally do not yield the coarse grades of vermiculite favored for attic insulation. Most of the material present in U.S. houses is likely have come from South Africa or from Libby, Mont. — Paul Ficht

# EXHIBIT 9

# THE JOURNAL OF LIGHT CONSTRUCTION

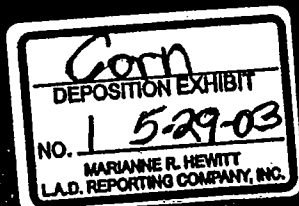
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## Letters

secure in the brick, rigid connections like nails could crack the masonry horizontally near the top of the wall the frame settles, even slightly.

Bill Thibadeau  
Norcross, Ga.

### Rainscreen Siding Details

To the Editor:

I read Joseph Lstiburek's "Water-Managed Wall Systems" with great interest. His comment that today's #15 and #30 felts do not perform as the old-style asphalt-impregnated felts did is a condemnation of the

constant search for manufacturing things more cheaply. Several years ago, we had a similar situation with fiberglass roof shingles cracking all over the country because the industry skimped on the amount of asphalt needed to stabilize the fiberglass mats.

To prevent the problems Lstiburek describes in his article, I have specified the rainscreen (referred to by Lstiburek as "water-managed wall systems") on several houses, including my own, over the last 15 years. The results appear to be very satis-

factory: no more peeling paint, rotting walls, and splitting, curling clapboards.

I found one thing missing from Lstiburek's article: There is no mention of the need to screen the drainage spaces to keep out insects and rodents. For this, I have used GAF's Cobra Fascia Vent, a spun plastic material similar to that used for some ridge vents. It seems to be the perfect material for this application: It is 3 inches wide by 1 inch thick. It fits well between 1-by furring strips, compressing easily to fit the depth of the furring. It comes in 50-foot coils, two coils per pack. You can special-order it from building material suppliers handling GAF ventilation and roofing materials.

I wish all builders and remodelers would get on the bandwagon and install all sidings on furring strips as I see done on Canadian modular units shipped to Vermont. It's an inexpensive insurance policy that eliminates most siding callbacks and can only lead to satisfied customers.

Henri de Marne  
Waitsfield, Vt.

### What To Do With Vermiculite Insulation

To the Editor:

After reading your article "Vermiculite Insulation: Asbestos Threat?" (*In the News*, 3/03), I looked at a job renovating an attic and noticed that the previous builder had used vermiculite insulation. I was wondering what steps I should take to dispose of this. Also, I was wondering if there was somewhere I could send a sample to determine if it contains tremolite. Should this insulation be removed, or would covering it with fiberglass insulation be a safe alternative?

Bill Harrington  
Battenkill Builders  
Bennington, Vt.

*continued on page 14*

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## Letters

continued from page 12

Don Vara responds: According to EPA Asbestos Program manager Jim Christiansen, who is in charge of a federal cleanup of vermiculite-containing attics in Libby, Mont., carefully covering the vermiculite with fiberglass without disturbing it will probably not raise enough dust to cause much of a hazard, but it won't make

the problem go away, either. If you're going to venture into the attic, wear a well-fitted respirator equipped with a HEPA cartridge and a disposable Tyvek suit; the homeowner should take similar precautions before going into the attic.

The only way to eliminate the problem is to have a qualified asbestos-abatement contractor come in and remove the vermiculite and confirm

that the area and the living space are free of fibers. There are well-established methods for doing that, but it's not going to be cheap. Don't try to remove the material yourself, or you're likely to spread asbestos fibers throughout the living space.

To add to the confusion, there's a serious inconsistency between law and science with regard to vermiculite. Under EPA regulations, only substances that contain more than 1% asbestos are regulated as asbestos-containing materials. Jim Christiansen notes that although an individual sample of vermiculite may contain anywhere from a nondetectable amount of asbestos up to 5% or so, a reading at or near the bottom of that range definitely does not mean that the material is safe. "The 1 percent standard was developed for things like pipe wrap, where you're talking about a solid material," he says. "The asbestos in vermiculite is so friable and becomes airborne so easily that it's hazardous even at very low levels."

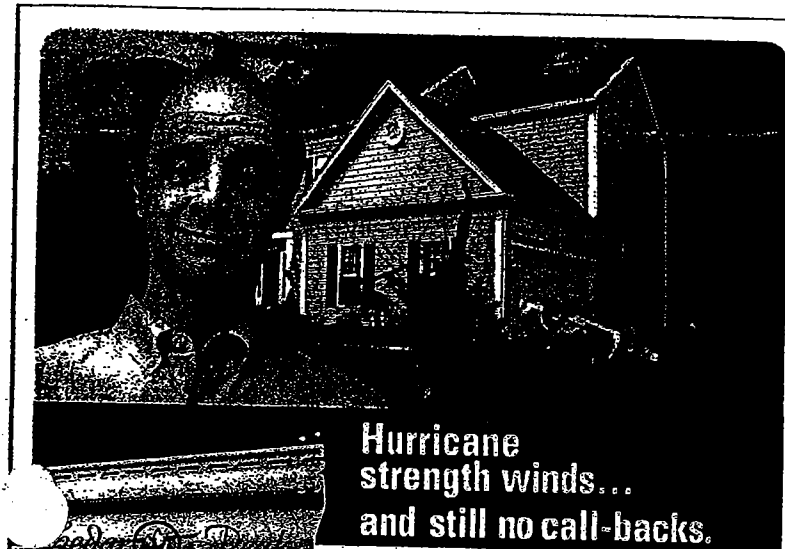
### Safety First, Please

To the Editor:

How many times do we safety-conscious contractors need to write in to tell you that you have a hazard on your front cover (3/03)? Safety glasses on the saw stand, not on his face! And tell me he is not making a cut with his left arm on the right side of the blade.

We pay more than \$30 per hundred paid on carpenters making less than \$22 per hour for workers' compensation. Do we really want to start using your magazine as a safety test — "What is wrong in this picture"? I would hate to not be able to attend JLC Live this year because of higher work comp rates. Your careless approach to safety affects everyone from you to the builder, costing more to the end consumer. Enough said.

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